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ABSTRACT

This study was designed to determine the instructional media competencies that inservice teachers of secondary education teaching disciplines recommend for preservice teachers in their discipline. A total of 975 questionnaires were sent to secondary school teachers in each of 13 disciplines in 25 randomly selected schools in Hawaii Oregon, and Utah. Four hundred sixteen questionnaires (47%) were returned. Analyses of the data support the following conclusions: (1) the teaching discipline influences recommendations by inservice teachers for instructional media competencies to be included in preservice teacher education programs; (2) the teaching discipline influences the perceived value of instructional media use in the classroom; (3) the perceived value of instructional media use influences recommendations for instructional media competencies; and (4) there are competencies that are common to all secondary education teaching disciplines as well as competencies that are unique to individual disciplines. Three recommendations are derived from the results of the study: (1) instructors of teaching discipline methods courses and instructors of instructional media should jointly design and develop learning activities to provide preservice teachers with the recommended competencies for their discipline; (2) specific learning activities should be developed that will enhance the preservice teacher education students' perception of the value of using instructional media; and (3) state teaching certification requirements should be written to require evidence that secondary education teachers have both general instructional media competencies and specific skills significant to their teaching disciplines. A list of the 56 instructional media competencies studied and four data tables are included as well as a copy of the questionnaire. (69 references) (BBM)

ED347998

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Media Competencies for Pre-Service Secondary Education Teachers: Teaching Discipline and Competency Selection

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MEDIA COMPETENCIES FOR PRE-SERVICE SECONDARY EDUCATION TEACHERS: TEACHING DISCIPLINE AND COMPETENCY SELECTION

INTRODUCTION

> "...studies show that even though teachers have a high level of media competence and equipment is available to them in their buildings, the majority of teachers do not make extensive use of educational media." (p. 60)
>
> C. Edward Streeter

Perhaps one of the reasons teachers do not use media extensively is due to the lack of instruction relative to effective use as it relates to specific disciplines. Knowing about media or knowing that it exists is not the same as knowing how to apply it to enhance the instructional needs of a particular discipline. Experienced or inservice teachers at the secondary level have an understanding of what works well for them. The intent of this study was to draw upon that experience by having inservice teachers recommend instructional media competencies that are beneficial to them in their disciplines.

Proctor (1983), reviewed the available literature relating to media use and found a difference between pedagogical theory and classroom practice. "The prescriptive literature, based largely on the results of empirical studies, outlines the benefits attributable to the use of media; but the descriptive literature, based largely on the results of surveys and questionnaires, reveals one almost universal theme: MEDIA ARE SELDOM USED." (p. 5) An analysis of several media research reviews such as Lumsdaine (1963), Saettler (1968), Levie and Dickie (1973), and Wilkinson (1980) supports the differences between research conducted to determine potential contribution to the teaching/learning process and those which identify or determine the current conditions of use within the classroom.

One application of the descriptive type research is significant in relation to the Teacher Education Programs in the Schools and Colleges of Education. Starting as early as 1932, attempts have been made to identify what is being taught in the media courses offered in Teacher Education Programs. Stracke (1932), Starnes (1937-38), Taylor (1942), de Kieffer (1948, 1959, 1970, 1977), Meierhenry (1966), Rome (1973), McCutcheon (1984) and others have attempted to provide an understanding of curriculum content of media courses. Some like Stracke (1932), Starnes (1937-38), de Kieffer (1948, 1959, 1970, 1977), and McCutcheon (1984) have reviewed the course content of media courses within the schools and colleges of

education. While others, Taylor (1942), deBernardis and Brown (1946), Fulton and White (1959), Rome (1973), Lare (1974), Jones (1982), etc., have considered media skills or competencies in use or recommended by inservice education personnel including classroom teachers, administrators and college instructors for methods courses as well as instructional media faculty. These studies make suggestions, either implicit or implied, regarding instructional media course content based on feedback obtained from users.

Reconciling the descriptive and prescriptive research has long been a problem as evidenced by Fulton (1960): "Research evidence indicates that we know much more about what we should be doing with modern communicative media in education than we are actually doing."(p. 496) Due to these apparent contradictions in research findings, drawing conclusions can sometimes be frustrating. Allen (1973) points out some factors that contribute to this frustration.

> "...a look back over the past 50 years of research is both encouraging and discouraging. We can see no neatly organized body of research findings that can be used to guide our practice. For the most part, past research has been haphazard, poorly integrated, and lacking any theoretical structure. We see little evidence that what we have found out is being applied to instruction or that we are even asking the right questions."(p. 49)

Allen (1973) seems to suggest a direction for future research when he says: "The major problem facing the researcher is the determination of the specific conditions under which different media should be employed, how the media should be designed, and with what kinds of learners."(p.48)

PURPOSE OF THE STUDY

This study was an investigation to determine the instructional media competencies that inservice teachers of secondary education teaching disciplines recommend for pre-service teachers in their discipline. The primary purpose of this study was to identify the instructional media competencies common to all teaching disciplines. In addition, the media competencies unique to each discipline were identified. Consideration was also given to the perceived value of instructional media use in the classroom, length of tenure as a teacher and the teaching location, namely Hawaii, Oregon and Utah. Recommendations were studied relative to the instructional approach in relation to teaching discipline.

DESIGN AND PROCEDURES

Hypotheses

The results of this study determine the retention or rejection of the following null hypotheses:

H_0 1. There is no significant difference in the recommendation of instructional media competencies among teachers in the secondary education teaching disciplines.

H_0 2. There is no significant difference in the perceived value of instructional media use in the classroom among teachers in secondary education teaching disciplines.

H_0 3. There is no significant difference in the recommended instructional approach among teachers in secondary education teaching disciplines.

Research Questions

The study gave additional consideration to the following research questions each related to the instructional media competency recommendations and teaching disciplines.

1. Is there a difference in instructional media competency recommendations by teachers in secondary education teaching disciplines based on the state in which they are teaching?

2. Is there any difference in the recommendations of instructional media competencies among all teachers in Hawaii, Oregon or Utah?

3. Is there a difference in the perceived value of instructional media use in the classroom among teachers in secondary education teaching disciplines based on the state in which they are teaching?

4. Is there any difference in instructional media competency recommendations based on perceived value of media use in the classroom?

5. Is there any difference in instructional media competency recommendations by teachers in secondary

education teaching disciplines based on perceived value of media use in the classroom?

6. Is there any difference in instructional media competency recommendations by teachers in secondary education teaching disciplines based on years of teaching experience?

7. Is there any difference in the factors for media non-use among teachers in secondary education teaching disciplines?

This paper does not summarize the entire study. Only the findings for hypotheses $H_0$1, $H_0$2 and research questions 1-5 above are presented here. These specifically relate to the recommendations of instructional media competencies by inservice teachers from selected secondary education disciplines and their perceived value of media use in the classroom.

Preparation of the Research Instrument

The instrument was a mail administered questionnaire. It consisted of instructional media competencies combined with a six point continuous rating scale ranging from not recommended to recommended. This allowed the respondent to judgmentally recommend the inclusion of each competency in a pre-service teacher education program.

The development of the instrument was accomplished in three stages:

1. Related literature; (Stracke (1932), deBernardis and Brown (1946), Jensen (1986), Meierhenry (1966), Okoboji (1959) and Streeter (1969); were studied to identify lists of media competencies commonly accepted in the field. Current course syllabi from selected universities and colleges offering introductory instructional media courses and current instructional media text books were also surveyed to refine and finalize the list of competencies. (See Table 1)

2. A jury panel of experts was selected that consisted of instructional media specialists and instructors as well as research specialists with expertise in questionnaire

development. Using a modified Delphi procedure, the panel members were asked to respond to the list of competencies on the questionnaire as well as its format and design.

3. The final questionnaire (see Appendix A) was reviewed by a research consultant for final recommendations. The questionnaire was then submitted to the panel for final acceptance or rejection. No panel members responded with further suggestions.

The Statistical Design

The design of the study included the following:

1. The population consisted of in-service teachers of secondary education teaching disciplines from public schools in the states of Hawaii, Oregon and Utah. A random numbers list was computer generated. Using current state school directories twenty-five (25) schools were randomly selected from each state. Each list of schools was reviewed for a match of size and location, ie:, rural, urban and metropolitan. A mailing list was computer generated for each of thirteen disciplines for each school. A total of three-hundred and twenty-five (325) mailings for each state or a total of nine-hundred and seventy-five (975) was prepared.

Using the procedures outlined by Dillman (1978) a questionnaire was mailed to teachers of the secondary education teaching disciplines. A cover letter was included explaining the purpose of the study and the importance of each response to the success of the study. Each questionnaire was numbered for follow-up purposes. A business reply envelope was included for return of the questionnaire. All the questionnaires were mailed on the same day.

Following Dillman's (1978) procedure a post-card follow-up reminder was prepared and mailed to all teachers in the study exactly one week after the first mailing.

As the questionnaires were returned they were checked off against the original mailing list. The intent was to send a second mailer with questionnaire to those not responding within a three week period. This was not accomplished due to the lack of time before the end of public school in the three states of the study.

Originally there were thirteen (13) secondary education teaching disciplines identified. As the questionnaires were returned and checked off it was noticed that there were very few being returned from "Computer Science" teachers. Most of the ones that were identified as "Computer Science" teachers had been addressed to "Mathematics" teachers. It was also observed that many being returned from "Mathematics"

teachers had actually been addressed to "Computer Science" teachers. It was decided that for purposes of this study it would be appropriate to combine the teaching discipline category "Computer Science" with "Mathematics". The combined category was entitled "Mathematics/ Computer Science." This resulted in twelve secondary education teaching disciplines for the study.

A period of one week was allowed to lapse after receiving what seemed to be the last response before the data were compiled and submitted for computer analysis. At the time of data compilation four-hundred and sixteen (416) or 43% of the total questionnaires had been returned. All questionnaires were usable and were included in the data pool. Of the four-hundred and sixteen (416) returns one-hundred and fifty-three (153) were from Hawaii. This represents a 47% return rate. There were one-hundred and twenty-six (126) from Oregon for a 39% return. Utah had one-hundred and thirty-seven (137) or a 42% return. The numbers returned were good considering only one follow-up reminder was sent. There were four additional questionnaires returned after the data were compiled and submitted. They were left out of the study. (See Table 2 for response frequencies by teaching discipline and location.)

2. The respondents were asked to make recommendations for instructional media competencies, perceived value of instructional media use in the classroom and recommendations of an instructional approach. The responses were recorded using a six point continuous scale, with values ranging from a low of 0 to a high of 5.0.

The data from the questionnaires were transferred to computer by the writer. The raw data were stored in disk form and then transferred to the university main frame Prime Computer for analysis. The analysis files were created and computed using the Statistical Package for Social Sciences-X (SPSSX) release 3.0.

3. The one-way analysis of variance was selected as the statistical analysis to test the three null hypotheses because they require the contrasting of two (2) or more means. The Duncan Multiple Range Test was utilized to determine which of the means of the teaching disciplines differed significantly for each of the instructional media competencies.

In addition to the one-way analysis of variance as described above, the t-Test was also used to develop information regarding one of the research questions (number 6) described above.

A total of six-hundred and eighty (680) one-way ANOVA's were computed. A total of six-hundred and seventy-two t-test's were completed. A series of cross tabulation tables and mean's tables were also completed.

4. The F Test was used to test the significance of the analysis. The alpha level for significance was set at p=.05 for all one-way ANOVA's. For informational purposes the t-Test results were compiled for p=.10 as well as p=.05.

5. Utilization of the data and information compiled requires more than quantitative analysis. The objective of the study is to develop a series of competency lists that are, first, common to all secondary education teaching disciplines and that are, second, unique to each teaching discipline or groups of disciplines. This requires reviewing the data and making qualitative judgments about the importance of each competency by teaching discipline.

DATA ANALYSIS AND FINDINGS

Responses to the questionnaire elicited from teachers in secondary education teaching disciplines within selected states were compiled for computer analysis using the SPSSX release 3.0 statistical package. The computer analysis produced the following findings for each of the hypotheses and research questions listed below.

Hypotheses

H_0 1. There is no significant difference in the recommendation of instructional media competencies among teachers in the secondary education teaching disciplines.

A one-way analysis of variance was computed for each of fifty-six (56) instructional media competencies plus four (4) "other" categories. (The four "other" categories produced no responses on the returns so they were disregarded in the analysis.) Of the fifty-six ANOVA's completed, thirty-six (36) or 64% indicated a significant difference in recommendations of instructional media competencies between teachers in the secondary education teaching disciplines at the .05 level of confidence or above. For these competencies null hypothesis H_0 1 is rejected. Twenty (20) or 36% indicated no significant difference. For these competencies null hypothesis H_0 1 is retained.

(Tables are available upon request.)

H_0 2. There is no significant difference in the perceived value of instructional media use in the classroom among teachers in secondary education teaching disciplines.

A one-way analysis of variance was computed along with the Duncan Multiple Range Test. A significant difference was indicated among how the teaching disciplines perceive the value of instructional media use in the classroom. Null hypothesis H_0 2 is rejected at the .0002 level of confidence. The results of the Duncan Multiple Range Test indicate that Industrial Arts teachers have the highest perceived value of instructional media use in the classroom with a mean of 4.17 while Music teachers with a mean of 2.90 have the lowest perceived value of instructional media use in the classroom. Eleven of the teaching disciplines (Industrial Arts, Home Economics, Health, Social Sciences, Sciences, Foreign Languages, Language Arts, Business, Art, Physical Education and Mathematics/Computer Science) were significantly different from Music. Three of the teaching disciplines (Industrial Arts, Home Economics and Health) were significantly different than Mathematics/Computer Science and Music. Table 3 displays the relative ranking of teaching disciplines by perceived value of instructional media use in the classroom.

(Tables are available upon request.)

Research Questions

While not stated as formal hypothesis the following research questions have been included in order to help clarify the information developed by this research. Each of the questions presented below expands upon what has been discussed relative to the impact of secondary education teaching disciplines upon teachers recommendations for specific instructional media competencies and their perceived value of instructional media use in the classroom.

1. **Is there a difference in instructional media competency recommendations by teachers in secondary education teaching disciplines based on the state in which they are teaching?**

A one-way analysis of variance was computed for each of the fifty-six instructional media competencies controlling for the states of Hawaii, Oregon and Utah. A total of one-hundred and sixty-eight (168) ANOVA's were completed.

For the state of Hawaii, eleven (11) or 20% of the recommendations for instructional media competencies tested significantly different among secondary education teaching disciplines at the .05 level of confidence or higher. Forty-five (45) or 80% of the instructional media competencies showed no significant difference among teaching disciplines.

For the state of Oregon, twenty-two (22) or 39% of the recommendations for instructional media competencies tested significantly different among secondary education teaching disciplines at the .05 level of confidence or higher. Thirty-four (34) or 61% of the instructional media competencies showed no significant difference among teaching disciplines.

For the state of Utah, eleven (11) or 20% of the recommendations for instructional media competencies tested significantly different among secondary education teaching disciplines at the .05 level of confidence or higher. Forty-five (45) or 80% of the instructional media competencies showed no significant difference among teaching disciplines.

A Duncan Multiple Range Test was computed for each instructional media competency found to have significant difference in order to determine which teaching disciplines were different.

(Tables are available upon request.)

2. **Is there any difference in instructional media competency recommendations among all teachers in Hawaii, Oregon or Utah?**

A one-way analysis of variance was computed for each of the fifty-six instructional media competencies using teaching location as a variable. Of the fifty-six ANOVA's completed, nineteen (19) or 34% indicated a significant difference in recommendations for instructional media competencies among all secondary education teachers in the states of Hawaii, Oregon and Utah at the .05 level of confidence or above. Thirty-seven (37) or 66% indicated no significant difference. A Duncan Multiple Range Test was conducted for each of the competencies indicating significant difference.

(Tables are available upon request.)

3. **Is there a difference in the perceived value of instructional media use in the classroom among teachers in secondary education teaching disciplines based on the state in which they are teaching?**

A one-way analysis of variance was computed for each teaching location namely Hawaii, Oregon and Utah. For the states of Hawaii and Oregon there were no significant differences in the perceived value of instructional media use in

the classroom found among teachers in the secondary education teaching disciplines.

For the state of Utah, a significant difference in the perceived value of instructional media use in the classroom among teachers in the secondary education teaching disciplines was found at the .0008 level of confidence. A Duncan Multiple Range Test was computed to determine which teaching disciplines were significantly different. The result of the Duncan Procedure indicates that Science teachers in the state of Utah with a mean = 4.40 are significantly different than Music teachers with a mean = 2.25, Physical Education teachers with a mean = 3.14, Business teachers with a mean = 3.39 and Math/Computer Science teachers with a mean = 3.44. In addition, all other teachers, ie., Health, Home Economics, Industrial Arts, Art, Language Arts, Foreign Language, Social Science and Math/Computer Science are significantly different than Music teachers.

(Tables are available upon request.)

4. **Is there any difference in instructional media competency recommendations based on perceived value of instructional media use in the classroom?**

The data relative to perceived value of instructional media use in the classroom was recoded from continuous to categorical. Responses of 0, 1, 2, and 3 were grouped together into category 1=low perceived value of instructional media use in the classroom. Response 4 became category 2=medium perceived value of instructional media use in the classroom. Response 5 became category 3=high perceived value of instructional media use in the classroom. There were one-hundred and fifty-one (151) respondents or 36% in category 1-low perceived value; one-hundred and forty (140) respondents or 34% in category 2-medium perceived value; and one-hundred and twenty-five (125) respondents or 30% in category 3-high perceived value of instructional media use in the classroom.

After recoding, a one-way analysis of variance was computed for each of the fifty-six (56) instructional media competencies. Of the fifty-six ANOVA's completed, forty-one (41) or 73% indicated a significant difference in recommendations of instructional media competencies among teachers having low, medium and high perceived value of instructional media use in the classroom at the .05 level of confidence or above.

(Tables are available upon request.)

5. **Is there any difference in instructional media competency recommendations by teachers in secondary education teaching disciplines based on perceived value of instructional media use in the classroom?**

A one-way analysis of variance was computed for each of the fifty-six instructional media competencies controlling for each of three categories (low, medium and high) of perceived value of instructional media in the classroom. A total of one-hundred and sixty-eight (168) ANOVA's were completed.

Selecting only teachers with a **low** perceived value of instructional media use in the classroom twenty-two (22) or 39% of the recommendations for instructional media competencies tested significantly different among secondary education teaching disciplines at the .05 level of confidence or higher. Thirty-four (34) or 61% of the instructional media competencies showed no significant difference among teaching disciplines.

Selecting only teachers with a **medium** perceived value of instructional media use in the classroom sixteen (16) or 29% of the recommendations for instructional media competencies tested significantly different among secondary education teaching disciplines at the .05 level of confidence or higher. Forty (40) or 71% of the instructional media competencies showed no significant difference among teaching disciplines.

Selecting only teachers with a **high** perceived value of instructional media use in the classroom three (3) or 5% of the recommendations for instructional media competencies tested significantly different among secondary education teaching disciplines at the .05 level of confidence or higher. Fifty-three (53) or 95% of the instructional media competencies showed no significant difference among teaching disciplines.

(Tables are available upon request.)

To assist with qualitative analysis and determination of appropriate lists of instructional media competencies by teaching disciplines, a series of means tables (available upon request) were developed of all fifty-six instructional media competencies by teaching disciplines.

Table 4 presents the breakdown of the recommendation scale by percentiles. This provides some criteria for the selection of instructional media competencies either for the total population of secondary education teaching disciplines or for individual teaching disciplines. A mean of 4.00 or better is at or above the 80th percentile and represents a **very** strong recommendation. A mean between 3.50 and 3.95 or the 70th to 79th percentile represents a strong recommendation for any given instructional media competency. Table 5 presents a

summary of the competencies by teaching discipline and the selection of each competency by discipline at or above the 70th and 80th percentiles. The competencies selected for the total population are from those indicating no significant difference from the analysis of variance described above.

CONCLUSIONS AND RECOMMENDATIONS

The analysis of the data collected presents evidence to support several conclusions regarding teaching disciplines, instructional media competencies and perceived value of media use in the classroom. The first hypothesis focused on the significant differences among the teachers of secondary education teaching disciplines and their recommendations of instructional media competencies to be taught to pre-service teacher education students in their disciplines. While the data does not indicate differences for the total set of media competencies there is enough evidence to make a general conclusion.

> Conclusion 1
>
> The teaching discipline influences recommendations by inservice teachers of secondary education for instructional media competencies to be included in a pre-service teacher education program.

Research question one, ("Is there a difference in instructional media competency recommendations by teachers in secondary education teaching disciplines based on the state in which they are teaching?"), and two, ("Is there any difference in instructional media competency recommendations among all teachers in Hawaii Oregon or Utah?"), are concerned with the teaching location namely Hawaii, Oregon and Utah and the recommendations of instructional media competencies. The data indicates a significant difference exists among teachers of secondary education teaching disciplines in the states of Hawaii, Oregon and Utah regarding their recommendations of instructional media competencies to be included in a pre-service teacher education program. For Hawaii and Utah there were eleven (11) competencies indicating significant difference, while in Oregon there were twenty-two (22). Careful review of the data indicates no evidence to suggest any similarities among teaching disciplines from the different states. The data presented regarding recommendations of instructional media competencies by all teachers in Hawaii, Oregon and Utah indicates that of the nineteen (19) media competencies indicating a significant difference, teachers from Hawaii have

the highest recommendation means for all nineteen (19) with Oregon teachers having the lowest recommendation means for eighteen (18) of the nineteen (19) competencies presented.

The second hypothesis focused on the significant differences among teachers of secondary education teaching disciplines and their perceived value of instructional media use in the classroom. The data indicates a significant difference among teachers of secondary education teaching disciplines regarding their perceived value of instructional media use in the classroom. Table 3 provides a ranking of teaching disciplines from high to low of perceived value of instructional media use in the classroom. The hypothesis was rejected at the .0002 level of confidence which gives strong evidence for a second conclusion from this study.

> Conclusion 2
>
> The teaching discipline influences the perceived value of instructional media use in the classroom of inservice teachers of secondary education.

As was the case for research questions one and two as described above, research question three, ("Is there a difference in the perceived value of instructional media use in the classroom among teachers in secondary education teaching disciplines based on the state in which they are teaching?"), focused on the consideration of teaching location. The findings indicate that there were no differences among teachers in Hawaii or Oregon regarding perceived value of instructional media use in the classroom. However, there is a significant difference in the perceived value of instructional media use in the classroom among teachers of secondary education teaching disciplines in Utah at the .01 level of confidence. Music teachers, with a value mean of 2.25, have the lowest perceived value of instructional media use in the classroom while science teachers, with a value mean of 4.40, have the highest perceived value. No conclusions are being suggested, only a recognition that differences exist among teachers in Utah that were not evidenced in either Hawaii or Oregon.

Additional information was developed relative to the consideration of perceived value of instructional media use in the classroom by research question four; "Is there any difference in instructional media competency recommendations based on perceived value of instructional media use in the classroom." By recoding the perceived value of instructional media data into categorical levels of low, medium and high it was possible to further analyze the teachers recommendations of instructional media competencies to be included in a pre-service teacher education program. The findings indicate that

there is significant difference among teachers having low, medium and high perceived value of instructional media use in the classroom regarding recommendations of forty-one (41) of the fifty-six (56) instructional media competencies studied. In general, all recommendations from teachers having a "high" perceived value of instructional media use in the classroom had a higher mean than either of the other two categories. These data provides evidence to support the following conclusion.

> Conclusion 3
>
> The perceived value of instructional media use in the classroom by secondary education teachers influences their recommendations of instructional media competencies to be included in a pre-service teacher education program.

The data collected and analyzed regarding research question five, ("Is there any difference in instructional media competency recommendations by teachers in secondary education teaching disciplines based on perceived value of instructional media use in the classroom?"), also support conclusion 3 regarding the influence of perceived value of instructional media use in the classroom on media competency recommendations. There were twenty-two (22) media competencies which indicate significant differences among teachers having a **low** perceived value of instructional media use in the classroom. For teachers with a **medium** perceived value of instructional media use there were sixteen (16) media competencies indicating a significant difference. There were only three media competencies indicating significant differences among secondary education teachers having a **high** perceived value. This set of data suggests that the higher the perceived value of instructional media use in the classroom the fewer differences there are among teachers of secondary education teaching disciplines for instructional media competencies to be included in a pre-service teacher education program.

The intent of this study was to determine the instructional media competencies that inservice teachers of secondary education teaching disciplines recommend for pre-service teachers in their discipline. The primary purpose was to identify the instructional media competencies common to all teaching disciplines and in addition, the media competencies unique to each discipline individually. The final conclusion is in response to the original objectives of the study. Table 5 presents a summary of the instructional media competencies that are recommended by all teachers of secondary education teaching disciplines and those unique to specific teaching disciplines. These are presented in support of the following

general conclusion about instructional media competencies significant to teachers of secondary education teaching disciplines.

Conclusion 4

There are instructional media competencies that are common to all secondary education teaching disciplines as well as instructional media competencies that are unique to each of twelve secondary education teaching disciplines.

Recommendations

The recommendations set forth in this study are based on two assumptions. According to the literature reviewed, instructional media, if properly used can enhance the teaching/learning process by increasing the amount of learning or reducing the amount of time necessary to accomplish the desired outcome. Second, inservice teachers of secondary education teaching disciplines have knowledge and experience that can provide a better understanding of the needs of pre-service teachers as they are preparing to enter the schools, as indicated by research reviewed and the findings of this study. Given these assumptions, the following recommendations are derived from the results of this study.

Recommendation 1

Instructors of secondary education teaching discipline methods courses and instructors of instructional media in institutions of higher education offering teacher education programs should jointly design and develop learning activities that will provide pre-service teacher education students in specific teaching disciplines the instructional media competencies identified as necessary for their discipline.

The recommendation described above could be accomplished by carefully selecting those instructional media competencies that are best developed in a formal instructional media course and those that could best be presented in the methods courses. Each should reinforce and support the other. It is important to recognize that one of the significant components of these courses and activities must be effective and appropriate modeling of these skills and competencies by the instructors involved. Learning about something is not the same as having a continuous example of its application in a realistic

setting that represents the environment in which pre-service teacher education students will be working.

Recommendation 2

Specific learning activities should be developed that will enhance the pre-service teacher education students perception of the value of the use of instructional media in the classroom.

This recommendation could be accomplished by instructional media instructors and methods instructors providing their students opportunities to be directly involved in educational innovation projects. These could focus on the application of computer or video technology to the teaching/learning process or in the design and delivery of instruction via telecommunication technology. The benefits of this type activity would be two fold. First, the students would have opportunity to see technology being applied to the teaching/learning process in a "real" setting. Second, by being involved on a participatory/contributive basis, the students will develop a better understanding of the benefits of such programs in terms of direct learner improvement. By being involved they can develop, to a degree, a sense of ownership in the outcomes and ideas of the project. It should be pointed out that such projects do not necessarily have to be high technology based. Providing pre-service teacher education students opportunity to develop and apply new applications of older and more simple technology in the delivery of instructional activities can be just as rewarding.

Recommendation 3

State Teaching Certification Requirements should be written to require evidence that secondary education teachers have both general instructional media competencies as well as specific skills that are significant to their teaching discipline.

The implementation of this recommendation would encourage schools and colleges of education to provide programs that offer courses in instructional media as well as methods courses for each teaching discipline. It would also encourage cross-departmental cooperation in the development and offering of learning activities designed to provide pre-service teacher education students the skills and knowledge necessary to meet the challenges of todays teaching profession.

A Personal Note

Considering the complexity of the teaching/learning process, it would seem that serious energy and thought should be expended on behalf of reform of pre-service teacher education programs. Teachers today are facing the challenge of preparing their students for a world that none of them can even begin to envision. This requires a level of preparation and skill that has not been demanded in the past. In order for teacher education programs to meet their responsibility to prepare future teachers, it is necessary to develop a greater sense of and commitment to, cooperative efforts among departments and faculty. Effort needs to be made that will breakdown the departmentalization and compartmentalizing of the various components within the university that make up a typical teacher education program. Pre-service teacher education students need to experience an integrated, cooperative program where each contributor is seen as professional and integral to the total educational system. Subject matter specialists, methods instructors, classroom management specialists, media specialists and the other applications specialists must work together to provide the student with an understanding of how each adds to the success of system.

A final observation from this research would be that inservice teachers place value on the skills and instructional media competencies that they use in their classrooms. They also seem to be saying that one of the ways they developed a sense of value for their use was through example (or non-example) presented by their methods instructors. The methods teacher, working in cooperation with the instructional media/technology information specialist has a unique opportunity to present methods, instructional approaches and media utilization in a way that can not be duplicated elsewhere. When the pre-service teacher of a particular discipline can see methods and materials being used in the context of the subject of interest, they are more likely to attempt to utilize or replicate that in their own classroom when the time comes.

The preparation of tomorrows teachers is a serious challenge. With the application of effective research, technology and an ever increasing understanding of the process of learning the task will be accomplished. Teacher education has never before been presented with such an opportunity to make a life altering contribution to the students of tomorrow. Pre-service teachers today must be given the tools and knowledges necessary to provide learning experiences for the students of tomorrow. Those students will be required to do more than rote recitation; they will need to function in a technological/information based society that demands high level thinking skills. The traditional textbook and lecture bound

teacher preparation program does not provide the level of skills and knowledge required. A change is required for the teacher education program of tomorrow. Cooperation and integration among all faculty within the teacher education program will lead to a far better prepared teacher of tomorrow.

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TABLES

Table 1: Fifty-six Instructional Media Competencies

I. Principles of Communication, Selection, Evaluation and Research

1. Communication Theory
2. Design and Layout of Visual Materials
3. Instructional Design Theory and Practice
4. Media Selection and Evaluation Criteria
5. Impact of Technology on Education
6. Implications of Instructional Media Research
7. Future Trends of Media and Technology in Education
8. Copyright Laws and Education

II. How to PRODUCE Instructional Media Materials

9. Lettering for Instructional Materials
10. Mounting Visuals
11. Laminating Visuals
12. Machine Produced Overhead Transparencies
13. Handmade Overhead Transparencies
14. Display Boards (Bulletin Boards, Displays, etc.)
15. Duplicating Inst. Materials (Dittos, Xerox, etc.)
16. Illustration and Enlargement Techniques
17. Manipulatives (Mathematic materials, etc.)
18. Audio Recording
19. Video Recording (off-air recording)
20. Video Programming (Producing own programs)
21. Still photography
22. Slide/tape programs
23. Computer Assisted Instruction
24. Computer Programming
25. Computer Graphics
26. Games, simulations and media kits

III. How to UTILIZE Instructional Media Materials

27. Non-projected visuals
28. Overhead Transparencies
29. Display Boards (Bulletin Boards, etc.)
30. Flip Charts
31. Chalkboards
32. Duplicated Materials (Dittos, Xerox, etc.)
33. Manipulatives (Mathematic materials, etc.)
34. Audio Recordings
35. Instructional Films and Videos (tape & disc)
36. Broadcast Television
37. Slides
38. Filmstrips
39. Computer Assisted Instruction
40. Computer Interactive Video Programs
41. Games and Simulations
42. Free and Inexpensive Materials
43. Field Trips and Community Resources

IV. How to OPERATE Instructional Media Equipment

44. Overhead Projectors
45. Spirit Duplicators (Ditto)
46. Opaque Projectors
47. Cassette Tape Recorders
48. Record Players
49. Video Tape Recorders
50. Video Camcorder Systems
51. Video Editing Systems
52. 16mm Motion Picture Projectors
53. 2X2 Slide Projectors
54. Filmstrip Projectors
55. Computer Interactive Video Systems
56. Microcomputer Overhead Projector LCD Systems

Table 2: Response Frequencies

	HAWAII	OREGON	UTAH	TOTAL
Art	9	8	12	29
Business	11	9	13	33
Foreign Language	17	8	14	39
Health	15	11	12	38
Home Economics	9	17	15	41
Industrial Arts	9	7	- 8	24
Language Arts	15	7	14	36
Math/Computer Science	26	16	16	58
Music	9	11	8	28
Physical Education	12	11	7	30
Science	12	16	10	38
Social Science	9	5	8	22
Total	153	126	137	416

Table 3 Relative Ranking of Teaching Disciplines by Perceived Value of Media Use in the Classroom

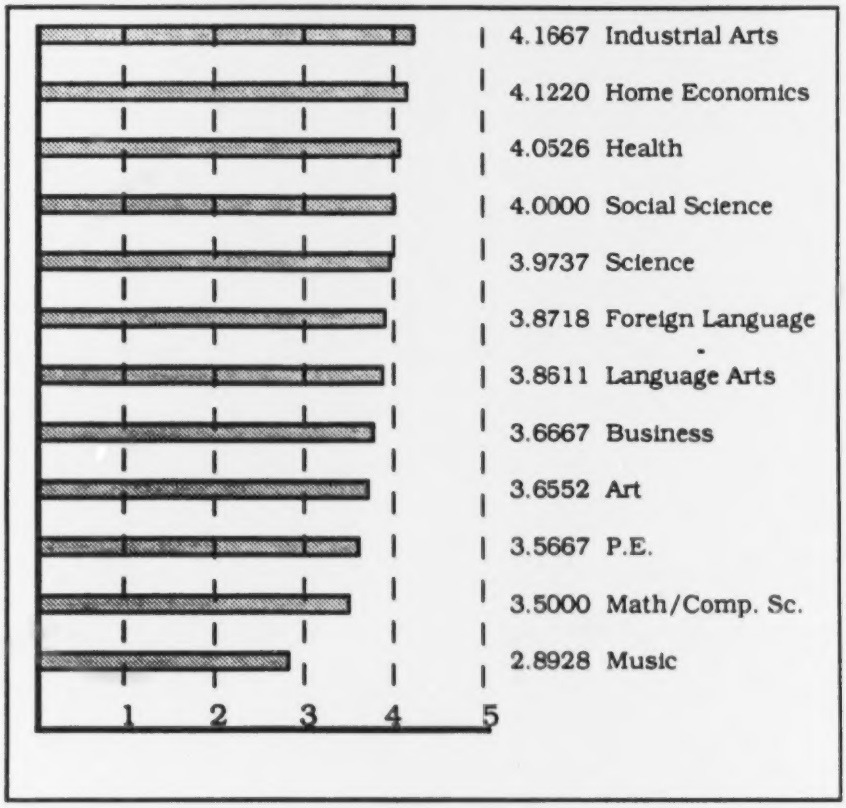

Table 4 Breakdown of Recommendation Scale by Percentile

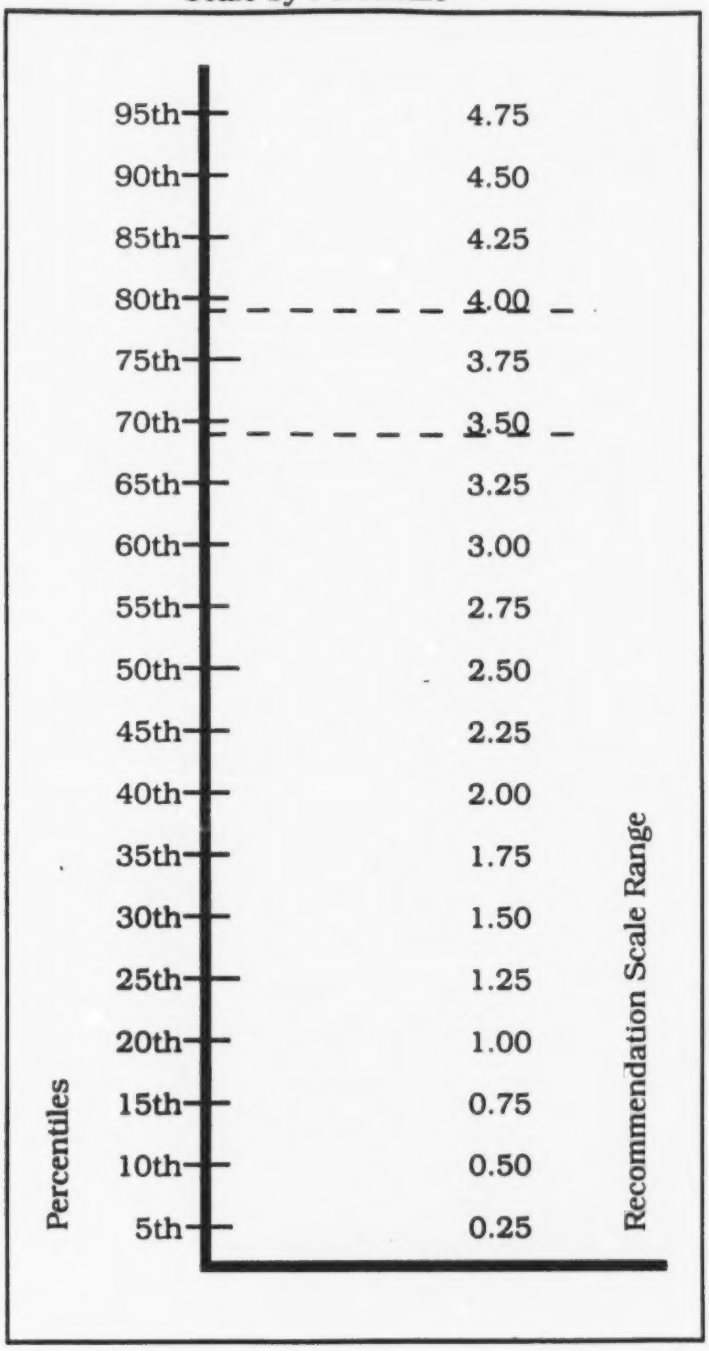

Table 5 Summary: Selection of Instructional Media Competencies

** = At or above 80th percentile. * = Between 70th and 79th percentile.	Total Population	Art	Business	Foreign Language	Health	Home Economics	Industrial Arts	Language Arts	Math/ Computer Science	Music	Physical Education	Science	Social Science
Foundation and Theory Competencies:													
1. Communication Theory		*	*			*							
2. Design and Layout of Visual Materials	*	**		*	*	*	**	*		*			
3. Instructional Design Theory and Practice		*					*						*
4. Media Selection and Evaluation Criteria	*	*	*			*		*				*	*
5. Impact of Technology on Education		**	**	*			**		*		*	*	
6. Implications of Inst. Media Research													
7. Future Trends of Media and Tech. in Educ	*	*	*	*	*	*	*	*	*		*	*	
8. Copyright Laws and Education	*	*	*	*	*	*	*	*	*	**	*		
Production Competencies:													
9. Lettering for Instructional Materials		*				*		*			*		
10. Mounting Visuals		*				*		*			*		
11. Laminating Visuals		*		*	*	*		*			*		
12. Machine Prod. Transparencies	*	*	**	*	*	*	*	*	*		*	*	*
13. Handmade Transparencies	*		*	*	*	*	*	*	*		*	*	*
14. Display Boards (B.B., etc.)		*	*	*	*	**		*	*	*	**		*
15. Duplicating Inst. Materials (Dittos, Xerox, etc.)	*	*	*	*	**	*	*	*	*	*	**	*	**
16. Illustration and Enlargement Techniques		*	*	*	*	**	*	*			*	*	*
17. Manipulatives (Mathematics materials, etc.)									**			*	
18. Audio Recording				*				*		**			
19. Video Recording (off-air recording)				*	*	*	*	*		**	**	*	*
20. Video Programming (Producing own programs)				**		*	*	*		*	**		*

Table 5 Summary: Selection of Instructional Media Competencies (cont.)

** = At or above 80th percentile. * = Between 70th and 79th percentile.	Total Population	Art	Business	Foreign Language	Health	Home Economics	Industrial Arts	Language Arts	Math/ Computer Science	Music	Physical Education	Science	Social Science
Production Competencies (Cont.):													
21. Still photography		*											
22. Slide/tape programs		*											
23. Computer Assisted Instruction	**	**	**	**	**	**	**	**	**	**	**	**	**
24. Computer Programming	*	*		*	*	*			*	*	*	*	
25. Computer Graphics		**	**	*	*	*	**	*	**	*	**	**	
26. Games, simulations and media kits				**	*	**					*		*
Utilization Competencies:													
27. Non-projected visuals				*		*						*	
28. Overhead Transparencies		*	**	**	*	*		**	**			*	*
29. Display Boards (Bulletin Boards, etc.)		*	**	*	*	*		*			*		
30. Flip Charts													
31. Chalkboards	*		*			*	*		*	*			
32. Duplicated Materials (Dittos, Xerox, etc.)	*		**	*	*	**	*	*	*	*	*	*	*
33. Manipulatives (Mathematics materials, etc.)									**				
34. Audio Recordings				*				*		**			
35. Instructional Films and Videos (tape & disc)		*	*	**	**	**	*	**		**	**	**	*
36. Broadcast Television				*				*			*	*	*
37. Slides		*											
38. Filmstrips		*				*							
39. Computer Assisted Instruction	**	*	**	**	**	**	**	**	**	*	*	**	**
40. Computer Interactive Video Programs	*	**	**	**	*	**	*	*	*		*	**	*

Table 5 Summary: Selection of Instructional Media Competencies (cont.)

** = At or above 80th percentile. * = Between 70th and 79th percentile. *** = Selected because all disciplines recommended inclusion.	Total Population	Art	Business	Foreign Language	Health	Home Economics	Industrial Arts	Language Arts	Math/ Computer Science	Music	Physical Education	Science	Social Science
Utilization Competencies (Cont.):													
41. Games and Simulations			*	**	*	**			*		*	*	*
42. Free and Inexpensive Materials	***	**	**	**	**	**	**	*	*	**	**	*	*
43. Field Trips and Community Resources	***	**	**	**	*	**	*	*	*	**	**	*	*
Operation Competencies:													
44. Overhead Projectors	*	*	*	*	*	**		*	**		*	*	**
45. Spirit Duplicators (Ditto)					*	*			*		*		**
46. Opaque Projectors		*				*							*
47. Cassette Tape Recorders		*				*				**	*		**
48. Record Players										*			*
49. Video Tape Recorders	***	**	**	**	**	**	**	**	*	**	**	**	**
50. Video Camcorder Systems	***	*	**	**	**	*	**	**	*	**	**	**	**
51. Video Editing Systems		*	*	*	*	*	**	*		*	**	*	**
52. 16mm Motion Picture Projectors					*	*					*		*
53. 2X2 Slide Projectors		*											*
54. Filmstrip Projectors		*				*							*
55. Computer Interactive Video Systems	**	**	**	**	*	**	*	*	**	*	**	**	**
56. Microcomputer Overhead Proj. LCD Systems		*	*	*	*	*	**	*	**		*	**	**

APPENDIX

MEDIA COMPETENCY RECOMMENDATION SURVEY

INSTRUCTIONS

The purpose of this survey is to determine instructional media competencies to be included in a pre-service teacher education program as recommended by inservice secondary teachers. Please respond to items as indicated, using the scale described for each category.

Your responses should be based on your experience as a teacher in your current teaching discipline. It would be helpful if you thought in terms of how you would structure an introductory instructional media course for pre-service teachers preparing to teach in your teaching discipline. If you are teaching in more than one discipline please respond based on your university major.

LOCATION : (Check one)

- HAWAII ☐
- OREGON ☐
- UTAH ☐

SCHOOL TYPE: (Check one)

- HIGH SCHOOL (9-12) ☐
- JR. HIGH SCHOOL (7-8) ☐
- COMBINED 7-12 ☐

YEARS TEACHING

NUMBER OF YEARS TEACHING FULL TIME? ☐

SCHOOL ENROLLMENT

APPROXIMATE SCHOOL ENROLLMENT? ☐

MEDIA COURSES

NUMBER OF CREDIT HOURS COMPLETED IN INSTRUCTIONAL MEDIA? ☐ Sem. ☐ Qtr. ☐

TEACHING DISCIPLINE: (Check the one that best describes your assignment.)

ART	☐	LANGUAGE ARTS	☐
BUSINESS	☐	MATHEMATICS	☐
COMPUTER SCIENCE	☐	MUSIC	☐
FOREIGN LANGUAGE	☐	PHYSICAL EDUCATION	☐
HEALTH	☐	SCIENCE	☐
HOME ECONOMICS	☐	SOCIAL SCIENCE	☐
INDUSTRIAL ARTS	☐	OTHER_____	☐

Are you the building media specialist? yes ☐ no ☐

Value of Media

In General How Would You Rank the Value of Instructional Media/Technology in your Classroom?	Not Valued 0	1	2	3	4	Highly Valued 5

The following instructional media competencies are found in most introductory media courses. Using the scale to the right, please indicate your recommendation for their continued inclusion in a pre-service teacher education program based on your experience in your particular teaching discipline.

Not Recommended					Highly Recommended
0	1	2	3	4	5

I. Principles of Communication, Selection, Evaluation and Research

	Not Recommended					Highly Recommended
1. Communication Theory	0	1	2	3	4	5
2. Design and Layout of Visual Materials	0	1	2	3	4	5
3. Instructional Design Theory and Practice	0	1	2	3	4	5
4. Media Selection and Evaluation Criteria	0	1	2	3	4	5
5. Impact of Technology on Education	0	1	2	3	4	5
6. Implications of Instructional Media Research	0	1	2	3	4	5
7. Future Trends of Media and Technology in Education	0	1	2	3	4	5
8. Copyright Laws and Education	0	1	2	3	4	5
9. Other_____	0	1	2	3	4	5

II. How to PRODUCE Instructional Media Materials

	Not Recommended					Highly Recommended
10. Lettering for Instructional Materials	0	1	2	3	4	5
11. Mounting Visuals	0	1	2	3	4	5
12. Laminating Visuals	0	1	2	3	4	5
13. Machine Produced Overhead Transparencies	0	1	2	3	4	5
14. Handmade Overhead Transparencies	0	1	2	3	4	5
15. Display Boards (Bulletin Boards, Displays, etc.)	0	1	2	3	4	5
16. Duplicating Inst. Materials (Dittos, Xerox, etc.)	0	1	2	3	4	5
17. Illustration and Enlargement Techniques	0	1	2	3	4	5
18. Manipulatives (Mathematic materials, etc.)	0	1	2	3	4	5
19. Audio Recording	0	1	2	3	4	5
20. Video Recording (off-air recording)	0	1	2	3	4	5
21. Video Programming (Producing own programs)	0	1	2	3	4	5
22. Still photography	0	1	2	3	4	5
23. Slide/tape programs	0	1	2	3	4	5
24. Computer Assisted Instruction	0	1	2	3	4	5
25. Computer Programming	0	1	2	3	4	5
26. Computer Graphics	0	1	2	3	4	5
27. Games, simulations and media kits	0	1	2	3	4	5
28. Other_____	0	1	2	3	4	5

III. How to UTILIZE Instructional Media Materials (apply media in the teaching/learning process)

	Not Recommended					Highly Recommended
29. Non-projected visuals	0	1	2	3	4	5
30. Overhead Transparencies	0	1	2	3	4	5
31. Display Boards (Bulletin Boards, etc.)	0	1	2	3	4	5
32. Flip Charts	0	1	2	3	4	5
33. Chalkboards	0	1	2	3	4	5
34. Duplicated Materials (Dittos, Xerox, etc.)	0	1	2	3	4	5
35. Manipulatives (Mathematic materials, etc.)	0	1	2	3	4	5
36. Audio Recordings	0	1	2	3	4	5
37. Instructional Films and Videos (tape & disc)	0	1	2	3	4	5
38. Broadcast Television	0	1	2	3	4	5
39. Slides	0	1	2	3	4	5
40. Filmstrips	0	1	2	3	4	5
41. Computer Assisted Instruction	0	1	2	3	4	5
42. Computer Interactive Video Programs	0	1	2	3	4	5
43. Games and Simulations	0	1	2	3	4	5
44. Free and Inexpensive Materials	0	1	2	3	4	5
45. Field Trips and Community Resources	0	1	2	3	4	5
46. Other_____	0	1	2	3	4	5

IV. How to OPERATE Instructional Media Equipment

	Not Recommended					Highly Recommended
47. Overhead Projectors	0	1	2	3	4	5
48. Spirit Duplicators (Ditto)	0	1	2	3	4	5
49. Opaque Projectors	0	1	2	3	4	5
50. Cassette Tape Recorders	0	1	2	3	4	5
51. Record Players	0	1	2	3	4	5
52. Video Tape Recorders	0	1	2	3	4	5
53. Video Camcorder Systems	0	1	2	3	4	5
54. Video Editing Systems	0	1	2	3	4	5
55. 16mm Motion Picture Projectors	0	1	2	3	4	5
56. 2X2 Slide Projectors	0	1	2	3	4	5
57. Filmstrip Projectors	0	1	2	3	4	5
58. Computer Interactive Video Systems	0	1	2	3	4	5
59. Microcomputer Overhead Projector LCD Systems	0	1	2	3	4	5
60. Other_____	0	1	2	3	4	5

Instructional Approach

Please rank the following approaches for teaching instructional media competencies in the order you would recommend based on your experience in your particular teaching discipline.

Ranking (1st-5th)

1. Formal Courses in Instructional Media. ☐
2. Media Competencies Integrated within the Teaching Methods Courses. ☐
3. Media Competencies Integrated within all Education Courses. ☐
4. Combination of Formal Courses and an Integration of Media Competencies within the Teaching Methods Courses. ☐
5. Other_____ ☐

Course Emphasis

The following categories of instructional media competencies constitute the curriculum in an introductory instructional media course. Indicate the percentage of emphasis that you would recommend for each category. (see pages 2 and 3 for reference)

I. Principles of Communication, Selection, Evaluation and Research. (see page 2) ☐ %

II. How to Produce Instructional Media Materials. (see page 2) ☐ %

III. How to Utilize Instructional Media Materials. (see page 3) ☐ %

IV. How to Operate Instructional Media Equipment. (see page 3) ☐ %

100%

Non-Use Factors Check all the factors that most frequently contribute to your descision <u>not</u> to use instructional media in the classroom.

1. Textbook materials are adequate. ☐
2. Do not believe media would help. ☐
3. Media is too time consuming. ☐
4. Arranging to use media is too great a hassle. ☐
5. Media hardware are too difficult to operate. ☐
6. Media materials in the school are outdated. ☐
7. No administrative support for using media. ☐
8. Other_____ ☐

Thank you for your help. Please place your completed questionnaire in the self addressed prepaid mailer and return it to the researcher at your earliest convenience. If you would like to review the results of the study please include your name and address.